



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,027	09/02/2003	Aldrich Holt Northrup Jr.	010681/KEL87	2026
32583	7590	12/13/2004	EXAMINER	
KELLOGG BROWN & ROOT, INC. 601 JEFFERSON AVENUE HOUSTON, TX 77002			DRODGE, JOSEPH W	
			ART UNIT	PAPER NUMBER
			1723	
DATE MAILED: 12/13/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/605,027	Applicant(s) NORTHROP ET AL.	
	Examiner Joseph W. Drodge	Art Unit 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.  
     4a) Of the above claim(s) 1-10,23,24 and 41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-22 and 25-37 is/are rejected.
- 7) ☒ Claim(s) 38-40 is/are objected to.
- 8) ☒ Claim(s) 1-9,21,22 AND 41 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

Art Unit: 1723

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-9, 23 and 24, drawn to an extraction vessel with an exterior manway and manway hatches, classified in class 422, subclass 256;
- II. Claims 10-22 and 25-40, drawn to method and apparatus for liquid liquid extraction utilizing apparatus having vertically arranged perforated trays with countercurrent flow, classified in class 210, subclass 634; and
- III. Claim 40, drawn to retrofitting an existing rotating disc contactor with a sieve tray liquid-liquid extraction unit, classified in class 210, subclass 511.

Inventions I, II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, inventions I and III each has separate utility such as in solvent extraction systems not employing the distinguishing features of Group II concerning configuration and other features of the riser means of the arrayed trays. See MPEP § 806.05(d).

The inventions are distinct, each from the other because:

The inventions are distinct, each from the other because Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Art Unit: 1723

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II or III, respectively, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Daniel Lundeen on December 7, 2004 a provisional election was made with traverse to prosecute the invention of Group II, claims 10-22 and 25-40. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-9, 23,24 and 41 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10-20 and 25-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Fiocco et al patent 4,511,537.

Fiocco et al disclose a countercurrent liquid-liquid extraction apparatus and corresponding method in which the heavy phase is introduced through upper inlet 16 and lower phase through lower inlet 14, and having vertically arranged trays 30,40,50 with perforated decks 70, risers defined by means 34,44,54 and seal means 36,46 and 56 that define areas in which the lighter phase drifts upwardly towards the next tray (column 4, line 66-column 5, line 40). Such risers converge from larger cross-sectional lower portions to smaller cross-sectional portions proximate baffles 72 and top of seal walls 62. The trays have perforations 82 and 84 for downward passage of the heavy phase.

Regarding claims 10 and 25, a wide range of light and heavy phase flow rates can be accommodated (column 5, lines 31-44). Regarding claim 26, the figures show slanted imperforate tray sections proximate the riser areas. Regarding claims 25 and 26, cross-flow portions of the trays are defined between sections 38 and 48 and disengagement baffle and coalescence means 210 and 22 beneath respective risers to disengage the phases (column 7, lines 45-51).

Art Unit: 1723

For claims 11, 12, 27 and 28, see upper distribution zone 86 and lower distribution zone 90/92.

For claims 13-15 and 29-34, the riser means have parallel plate and vertically arranged restrictors and flow redirectors and define parallel passages 34-44-54 for horizontal and vertical light phase flow.

Regarding claims 16-18 and 35-37, the risers may be generally peripheral as in figure 1 or more mid-section as in the embodiment of figure 3 and may be incorporated into one to three- pass sections (column 9, lines 49-62).

Concerning claim 19, flow rates within the claimed proportional range are disclosed at column 10, lines 46-49.

Concerning claim 20, solvent is introduced at the top of the apparatus, see column 6, line 23.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fiocco et al patent 4,511,537 in view of Fiocco patent 4,588,563.

Claim 21 differs in requiring the solvent to be an aliphatic hydrocarbon of 3-5 carbons, Fiocco et al disclosing phenol solvent to extract contaminants from lube oil. Fiocco teaches such solvent (propane) at column 1, lines 14-15. It would have been obvious to one of ordinary skill in the art to have utilized the apparatus and method of Fiocco et al for propane solvent extraction, as suggested by '563, since propane is readily available and well known for extracting impurities from crude oil.

Claim 22 differs in requiring that the solvent is introduced from the bottom; '563 teaching such arrangement in column 3, lines 15-16. It would have also been obvious to one of ordinary skill in the art to have modified the operation of Fiocco et al by using a bottom fed solvent and top fed feed, as taught by '563, since the system of '563 utilizes a countercurrent arrangement quite similar to that of Fiocco et al for a different combination of solvent and feed.



#### ALLOWABLE SUBJECT MATTER

Claims 38-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 38 and 39 distinguish in view of recited blanking strips arranged to selectively block off perforation portions of the trays, the prior art only teaches full flow through the trays.

Claim 40 distinguishes in view of recited personnel access hatches in the tray decks comprising access panels of adjacent trays that overlap.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fiocco et al patent 4,528,068 and Bushnell et al patent 3,899,299 show further prior art arrangement of countercurrent solvent extraction apparatus with vertically arranged sieve tray extractions and varying techniques for effecting upwards, rising flow of the lighter phase.



Art Unit: 1723

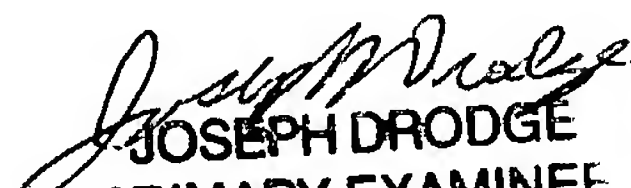
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

December 8, 2004

  
JOSEPH DRODGE  
PRIMARY EXAMINER